Preventing Diseasein Rainbow Trout Caused by Aeromonas Salmonicida

Bartkova, Simona; Kokotovic, Branko; Dalsgaard, Inger

Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

PREVENTING DISEASE IN RAINBOW TROUT CAUSED BY *AEROMONAS SALMONICIDA*

S. Bartkova*, B. Kokotovic, I. Dalsgaard

National Veterinary Institute, Technical University of Denmark, Frederiksberg C, Denmark

Background

The bacterium *Aeromonas salmonicida* subsp. *salmonicida* is the causative agent of furunculosis, one of the major diseases in aquaculture throughout the world that can affect various fish species [1, 2]. In Denmark this disease primarily affects sea reared rainbow trout (*Oncorhynchus mykiss*) production. Our study is a part of the collaborative project "Targeted disease prophylaxis in marine fish farming (ProFish)" which will develop and implement tailored vaccines with Danish strains of *A. salmonicida* to marine trout farming.

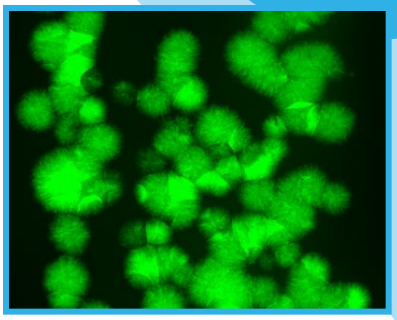
Objectives

Fluorescence and Bioluminescence

***A. salmonicida* will be studied by fluorescence and bioluminescence to follow the infection route and the latent phase of furunculosis in the fish.**

MLST and RFLP

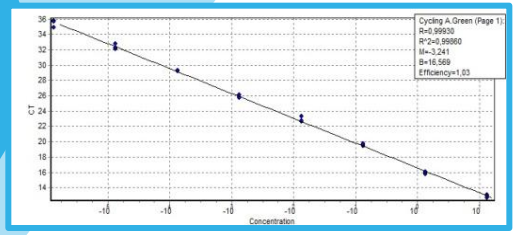
***A. salmonicida* isolated from trout farmed in Denmark are currently being examined by a Multi-locus Sequence Typing (MLST) assay and High Copy Number IS630 Restriction Fragment Length Polymorphism (HCN-IS630-RFLP). A panel of bacteria is selected for genome variation analysis through next generation sequencing and the results will be used for establishing a PCR-based genotyping analysis.**



Fluorescence microscopy of colonies of *Aeromonas salmonicida* carrying the plasmid pAK*gfplux*1

qPCR

A "quantitative polymerase chain reaction" (qPCR) based on self-quenched, fluorogenic primers has been developed and is expected to be implemented in both diagnosis and monitoring. Primers show high sensitivity and are being tested.



Standard curve plot for calculation of qPCR efficiency and quantitation, constructed with serial 10-fold dilutions of known *A. salmonicida* recombinant plasmid concentrations.

Expected Results

These methods are expected to generate new knowledge on the pathogenesis and the latent phase of furunculosis as well as the epidemiology and molecular characterization of *A. salmonicida*.

The overall aim is to improve prevention and control of the disease.

1. Beaz Hidalgo R, Figueras MJ. Molecular detection and characterization of furunculosis and other *Aeromonas* fish infections. In: Carvalho E, David G, Silva R, eds. *Health and environment in aquaculture.* InTech; 2012:97-132. http://www.intechopen.com/books/health-and-environment-in-aquaculture/molecular-detection-and-characterization-of-furunculosis-and-other-aeromonas-fish-infections. 10.5772/2462.

2. Bernoth E, Ellis AE, Midtlyng PJ, Olivier G, Smith P, eds. *Furunculosis: Multidisciplinary fish disease research.* London UK: Academic Press; 1997.